



OpenPrinting

CUPS Development

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Agenda



- Now: CUPS 2.4.x and Printer Applications
- Next: CUPS 2.5 and OAuth
- Future: CUPS 3.0 a.k.a. The Next Generation

CUPS 2.4.x (Stable)



- Release Manager: Zdenek Dohnal (Red Hat)
- Releases:
 - 2.4.0 - November 29, 2021
 - 2.4.1 - January 27, 2022
 - 2.4.2 - May 26, 2022
 - 2.4.3 - Soon

Printer Applications



- Replacement for CUPS printer drivers
- Look like IPP Everywhere™ printers
- Work with all versions of CUPS since 1.4
- Many now available:
 - ghostscript-printer-app: <https://github.com/OpenPrinting/ghostscript-printer-app>
 - gutenprint-printer-app: <https://github.com/OpenPrinting/gutenprint-printer-app>
 - hp-printer-app: <https://github.com/michaelsweet/hp-printer-app>
 - hplip-printer-app: <https://github.com/OpenPrinting/hplip-printer-app>
 - LPrint: <https://github.com/michaelsweet/lprint>
 - ps-printer-app: <https://github.com/OpenPrinting/ps-printer-app>

CUPS 2.5 (Development)



- Release Manager: Till Kamppeter
- Proposed Features:
 - <https://github.com/OpenPrinting/cups/milestone/6>
 - OAuth 2/OpenID support (client and server)
 - Localization improvements
- Proposed Release Schedule:
 - 2.5b1 - March 2023
 - 2.5rc1 - April 2023
 - 2.5.0 - May 2023
 - 2.5.1 - July 2023

CUPS 2.5 + OAuth



- OAuth protocol work being done in the Printer Working Group:
 - <https://www.pwg.org/ipp>
- CUPS 2.4.x has the basics in place, but no default callback or UI
- Need:
 - Default OAuth callback and UI
 - Add support for Bearer auth method in cupsd
- Need to enlist desktop developer(s) for OAuth UI
 - Create separate project as needed for UI and D-Bus service that libcups can talk to?
 - Important to coordinate X.509/OAuth functionality with 3.0 development to minimize differences and provide a clear migration path

CUPS 3.0 (The Next Generation)



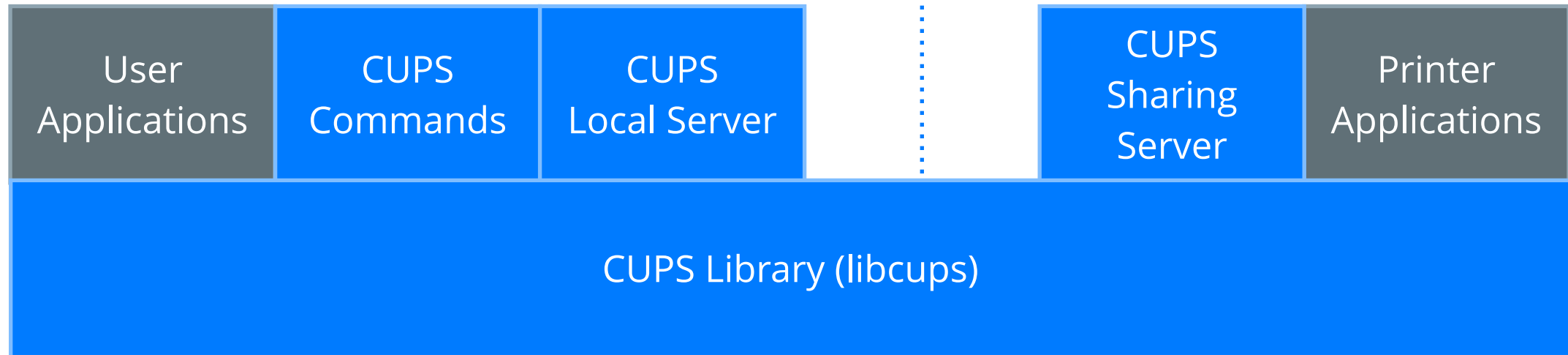
- Release Manager: Michael Sweet
- Major goals:
 - Move away from PPD files, just use IPP Everywhere™ attributes and values
 - Split local printing (simple spooling/transform support) from network sharing (complex spooling/transform/accounting support)
 - Sub-projects for logical components that can be maintained and developed separately
- Proposed Release Schedule:
 - libcups 3.0b1 - October 2022
 - cups-* 3.0b1 - September 2023

CUPS 3.0 Architecture



User-Level

System-Level



CUPS 3.0 Library (libcups)



- Repository (mostly complete, stable):
 - <https://github.com/OpenPrinting/libcups>
- Changes:
 - Deprecated APIs in CUPS 2.x have been removed
 - Some functions and types have been renamed
 - Now use `bool` and `size_t` types where appropriate
 - Added/promoted portable DNS-SD, IPP data file, and threading APIs
 - "MIGRATING.md" and CUPS programming manual provide details
- Still need to add/promote D-Bus interface and localization APIs, and finish ipptool bug fixes and enhancements

CUPS 3.0 Commands



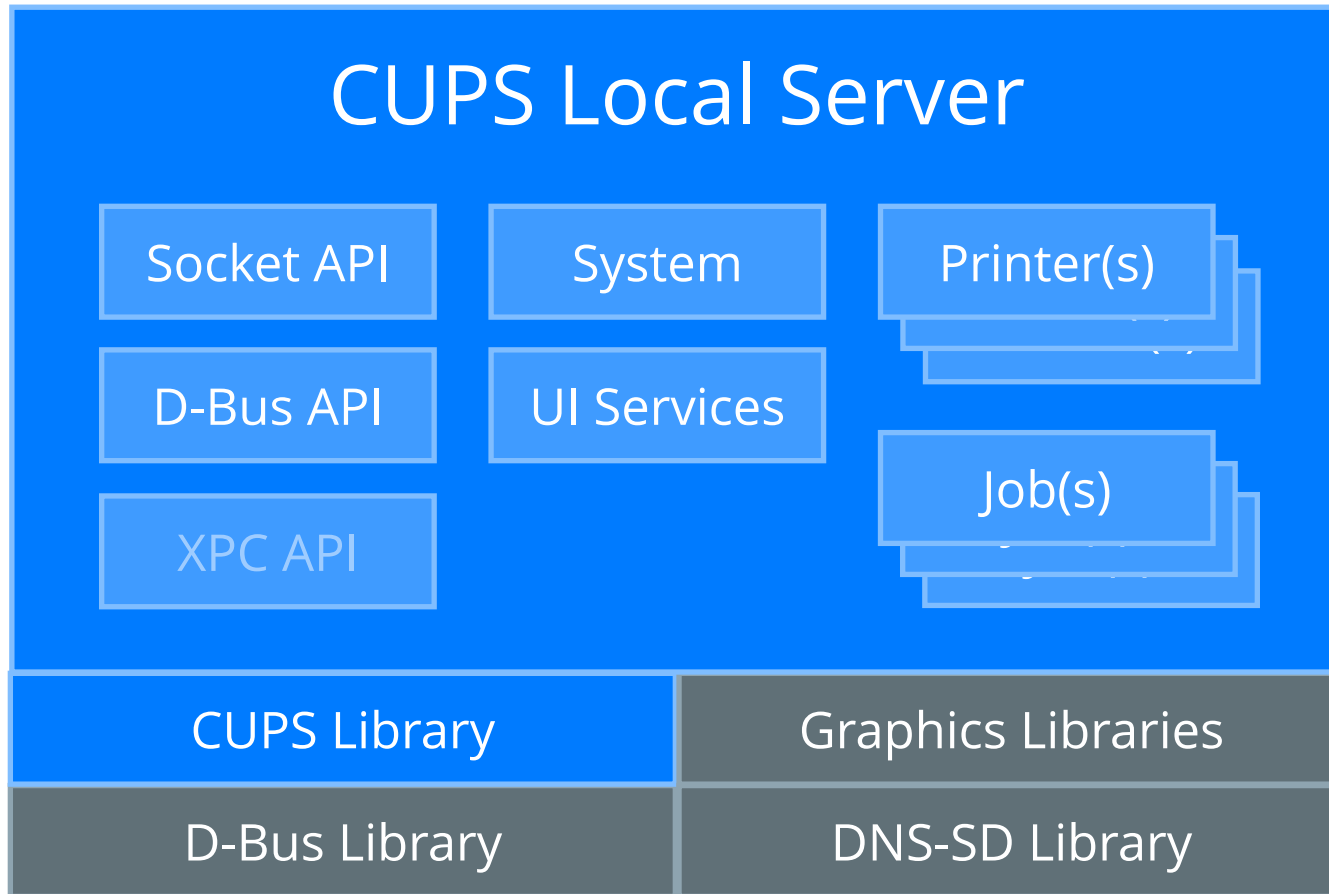
- Repository (pre-beta):
 - <https://github.com/OpenPrinting/cups-commands>
- Changes (so far):
 - lpadmin changed for post-PPD world
 - lpinfo removed

CUPS 3.0 Local Server



- Repository (pre-beta):
 - <https://github.com/OpenPrinting/cups-local>
- Progress:
 - Build system and baseline server code committed

CUPS 3.0 Architecture



(Socket API == IPP)

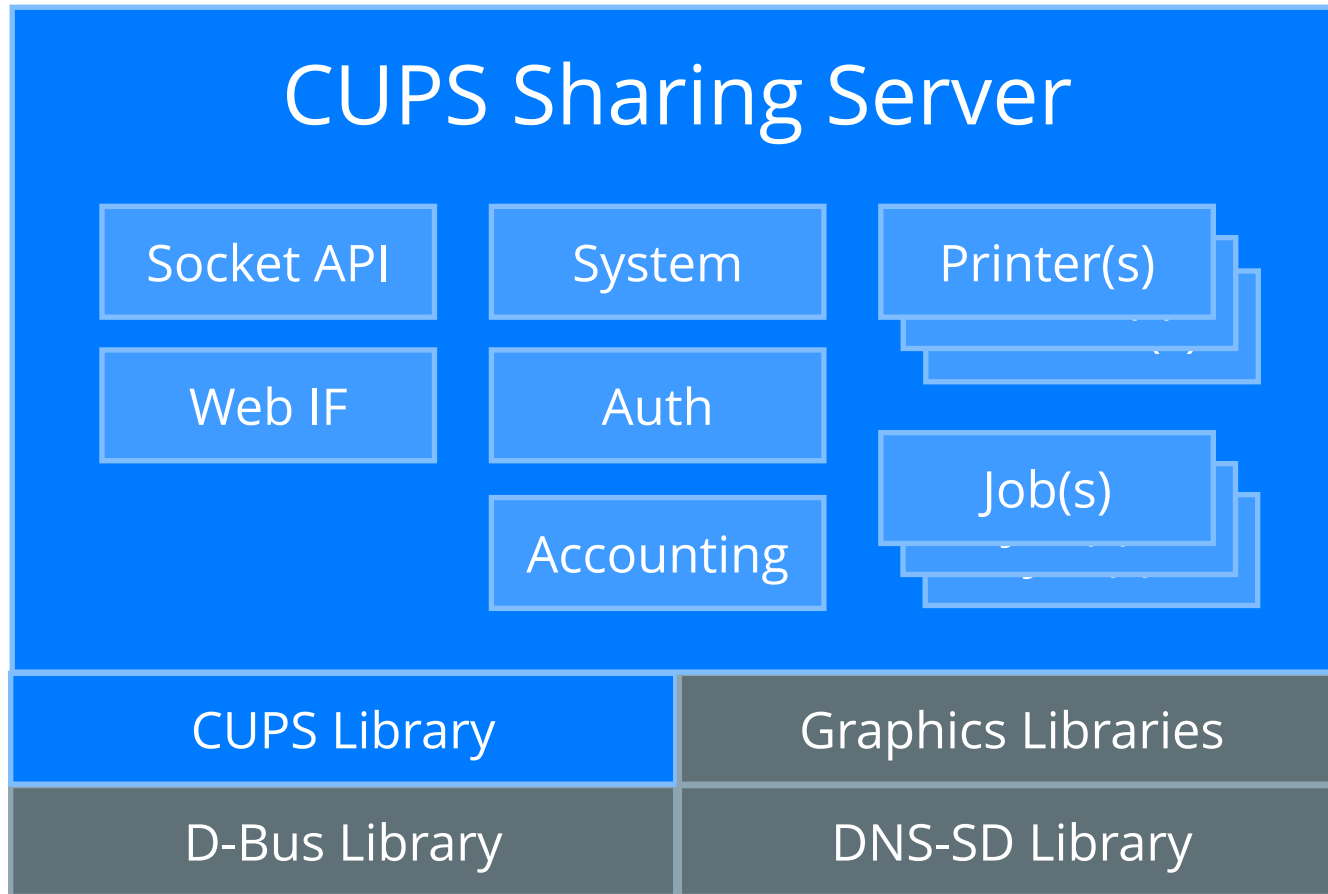
- Handles all discovery and communications with printers
- Handles authentication, authorization, consent, and notification UI
- Converts to/from PDF/raster as needed for printers
- Job history is limited to the current session/login
- No web interface
- Configuration limited to listing specific printers or servers that cannot be discovered via DNS-SD ("profiles")

CUPS 3.0 Sharing Server



- Repository (pre-beta):
 - <https://github.com/OpenPrinting/cups-sharing>
- Progress:
 - Build system and baseline server code committed

CUPS 3.0 Architecture



(Socket API == IPP)

- Handles all communications with printers
- Authorization/consent/notification UI needs to be handled by client
- Converts to/from PDF/raster as needed for printers
- Push (to printer) and pull/release (from printer/proxy)
- Job history is configurable with accounting interface
- Web interface
- Configuration similar to existing cupsd
- OAuth token introspection (RFC 7662) and scopes for ACLs

CUPS 3.0 Planning



- User interfaces:
 - Print dialog
 - Authentication
 - Consent for accounting/privacy
- Command-line authentication and "API key" support
- Print profiles (alternative to DNS-SD/mDNS for printer discovery)
- Printing:
 - IPP Everywhere™/AirPrint™/Mopria® (PDF/Raster)
 - Windows/SMB (PostScript/PCL)
 - Print to file (PDF)

CUPS 3.0 Planning (con't)



- Transforms:
 - PDFio provides necessary PDF support
 - Still need to finalize raster support
 - Poppler/Xpdf on Linux, CoreGraphics on macOS
 - Would be nice to standardize on a common graphics library with a suitable license/build system for rendering PDF content



OpenPrinting

Open Discussion